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FINAL REPORT
of the
COINS REVIEW GROUP
1 February 1973

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COINS FINAL REPORT

SUMMARY

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SUMMARY

This report covers the activities of COINS Review Group, from October 1972 to February 1973. Tasked by the ASD (I) under the auspices of the IRAC, the Group examined the broad issue of automated intelligence information exchange, and evaluated the COINS experiment as a viable means toward promoting such exchange.

The major study conclusions are generally positive:

1. There is a present need for automated information exchange among members of the intelligence community, and this need will rapidly increase in the future with the advent of operational systems capable of delivering data in near real-time.

2. The COINS system has demonstrated the feasibility of on-line data base exchange.

3. As presently configured, COINS has enhanced the effectiveness of intelligence analysts, resulting in overall manpower savings, and relieving burdens on certain communication facilities.

4. The benefits of COINS have been achieved in a highly cost-effective manner, utilizing existing hardware and software.

Several notable weaknesses in the COINS configuration have been revealed.

1. Present COINS executive support is not at a high enough level to deal effectively with the problem of coordinating diverse intelligence agencies.

2. The files accessible through COINS are not an optimum set of existing files.

3. The system operates at the SI security level and suffers from the exclusion of vital TK data.

4. COINS is not interactive.

5. The present COINS configuration is growth-limited with respect to files which may be accessed and speed with which access may be achieved.

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Based on the above conclusions and problem highlights, the following recommendations are made:



3. COINS funding be continued, under the following stipulations:

- a. The present system be upgraded to the TK level.
- b. COINS be purged of unused files and these files replaced by the files of interest to the community, as identified in this study.
- c. COINS management reporting be strengthened to allow evaluation of usage, timeliness, and effectiveness.
- d. The COINS PMO submit a detailed plan for an upgraded system which will address the weaknesses previously identified in a cost-effective manner.

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I. INTRODUCTION

The COINS Review Group was established under the general auspices of the Intelligence Resources Advisory Committee to review and evaluate the COINS system as a means for automated information exchange among intelligence agencies in the Washington area. This report is the result of the review, performed between November 6, 1972 and February 1, 1973.

Members of the Review Group were:

Department of State

Mr. Brewer J. Merriam
Director, Office of Current Intelligence
Bureau of Intelligence & Research

Mr. William P. Deary
Deputy Director, Office of Current
Intelligence
Bureau of Intelligence & Research

CIA

[REDACTED]
Deputy Director of Strategic Research

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Office, DCI

[REDACTED]
Chairman, Information Handling
Committee

25X1

[REDACTED]
Chief of IHC Support Committee

25X1

NSA

[REDACTED]
Assistant Director for Science &
Technology

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[REDACTED]
Chief, Reporting and Information
Element

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[REDACTED]
COINS Project Manager

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DIA

[Redacted]
Deputy Director for Intelligence

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Assistant Deputy Director, Systems
Division

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OASD(I), Chairman

Dr. Myron S. Malkin
Deputy Assistant Secretary of Defense
(Technical Evaluation)

Members of the Working Group were:

Department of State

Mr. Don Stigers
Mr. Julian Adler

CIA

NSA

DIA

[Redacted]

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OASD (I), Chairman

Mr. Norman Solat
Assistant for Science & Technology
ODASD(SE)

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II. OBJECTIVES

The objectives of the Review Group are best stated in the context of the objectives of the COINS experiment itself, with particular reference to the background and the history which led to the experiment. Briefly, the origins of COINS stem from a review of the operation of the Washington area intelligence community performed in 1965 by the President's Foreign Intelligence Advisory Board. The PFIAB informed the President that community progress in applying information science and technology was unsatisfactory and stated: "Unless strong and immediate actions are undertaken in this area, there is danger that the efficiency of the production and dissemination of intelligence within the intelligence community will decline progressively, and that the already high costs involved will climb so steeply as to jeopardize rational support of the broad intelligence effort".

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In July 1967 the PFIAB reported to the President that although the community had made noteworthy strides in information handling, the problem was not being addressed adequately on a concerted community-wide basis, and made several recommendations for a phased implementation of a community-wide information handling system. By May 1968 the COINS experiment was more clearly defined and an Evaluation Panel was to be established by the IHC to evaluate the experiment as soon after July 1969 as was practical. Due to the continuously fluctuating nature of the COINS system, that evaluation was not performed.

In September 1972, in response to an NSA proposal to proceed with the development of a COINS II system, the ASD (I) suggested that a group not presently charged with implementation of the system review the broad question of information exchange under the general auspices of IRAC. Consequently, the COINS Review Group was formed. The Group was charged in its Terms of Reference (Appendix I) with the following objectives:

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1. To review and evaluate the COINS system, determining its effectiveness in meeting the present and anticipated requirements of the user community.

In this context, due to difficulties in arriving at a precise operational definition of COINS, the Review Group found it advisable to expand the objective to allow

a. Evaluation of the broad requirement for automated information exchange.

b. Evaluation of the ability of COINS, as presently constituted, to satisfy that requirement.

2. To identify those areas where the effectiveness of COINS in improving the intelligence product may be enhanced.

3. To recommend courses of action and consider their impact on present and future budget allocations.

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III. METHODOLOGY

The Review Group, formed in late October 1972, was comprised of representatives of the DCI, the national agencies involved in automated intelligence information handling (NSA, CIA, and the Department of State), DIA as the DOD intelligence producer, a major COINS participant, and representative of the services and U. & S. Commands, and chaired by the ASD (I) representative.

Sitting in regular sessions at approximate intervals of two weeks, the Review Group established detailed Terms of Reference, and outlined a phased program of activities which would permit the fulfillment of the objectives within the allotted time. A continuing Working Group was formed with representation from each of the above organizations, and chaired by an ASD (I) representative. This latter group was augmented, as required, with additional personnel possessing needed substantive expertise. The Working Group was responsible for the performance of the study tasks and the maintenance of the schedule.

The Review Group was briefed at various times on subjects of interest (e.g., description of COINS, evaluation efforts, and the problems of computer security). As constituted, the Group was able to foster a significant interagency dialogue covering each of the major issues.

The severe time constraints for the study effort imposed certain limitations on the ability to generate new information. Therefore, the Working Group made maximum use of existing data, reports, and statistics, and whatever on-going work was available. However, for analysis of the total community file structure, it proved necessary to develop information which did not exist previously. The Working Group solicited and obtained descriptive material from each agency regarding all pertinent files, whether or not presently classified as a COINS file. The compilation of file information, together with agency expressions of interest and data regarding use, represents a significant contribution of previously unavailable information which was used to derive some of the major conclusions and recommendations of this report. This compilation is included in Attachment A.

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IV. RESULTS

A summary of the information gathered during the course of the study is presented as Attachment A, and briefly commented on in this section.

The results cover two general topics:

A. System Descriptions - current system and alternatives, including advantages, disadvantages, limitations, and costs.

B. Files - summary of the data on Washington area files, including COINS and non-COINS files, with comments regarding use and interest.

A. System Descriptions

1. Current System



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The configuration is limited, however, by the fact it operates [redacted] thereby limiting the information available to users. Additionally, massive files, such as AEGIS, (a CIA textual file) cannot be accommodated.

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A summary of the pro-rata and unique cost (FY 73) for all agencies for COINS is contained in the following table. Complete cost breakdowns are contained in Appendix II.

Agency



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2. Alternative Configurations - Four broad categories were considered.



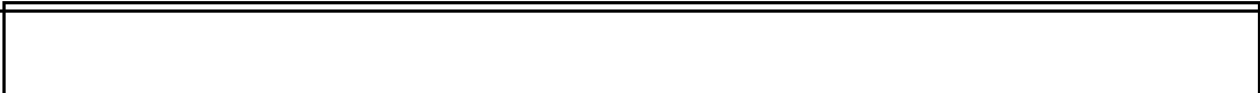
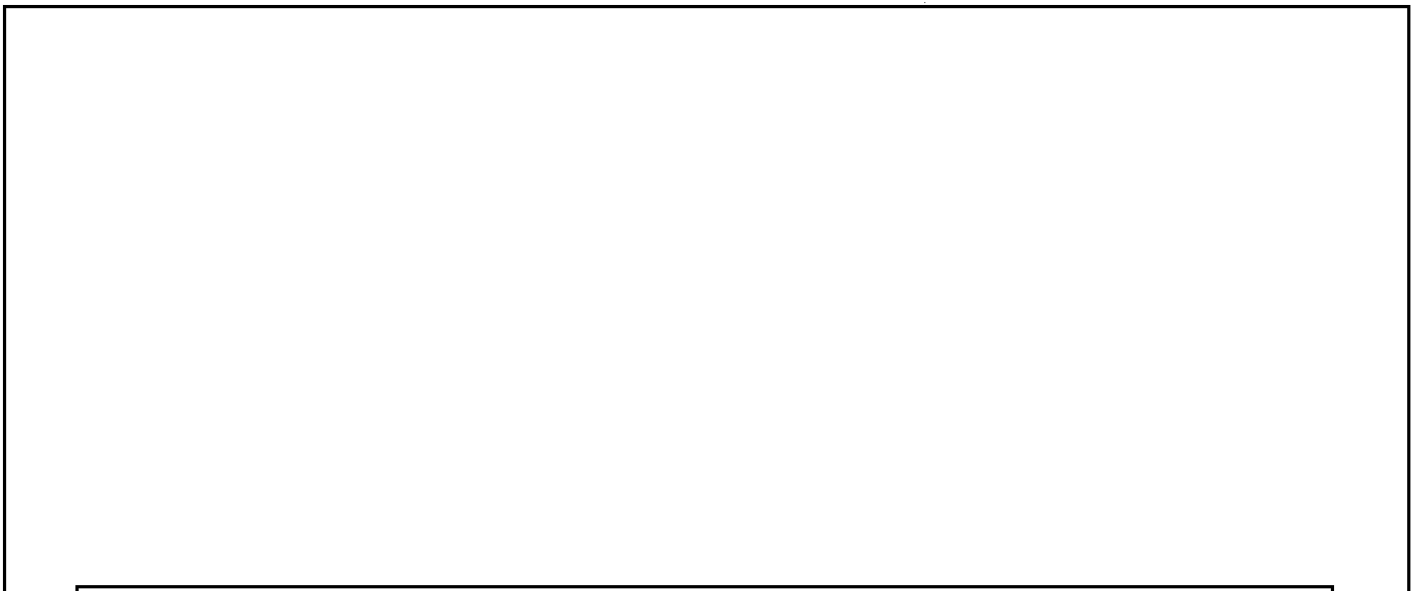
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b. Eliminate COINS and satisfy existing and future inter-agency exchange requirements either through bilateral, direct terminal access arrangements, or by reverting to off-line only exchange.

c. Upgrade COINS to eliminate major weaknesses.

d. Replace COINS with central information storage and retrieval system.

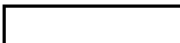
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Alternative 2 - Eliminate COINS

(a) Revert to Off-Line Exchange.

The only justification for this alternative would be an overriding need to realize whatever resource savings might be achieved from outright abolishment of COINS. The maximum theoretical savings achievable would amount to  That saving would be reduced by the amount of resources necessarily rededicated to the production of hard copy reports and the reinstitution of electrical summaries.

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The disadvantages of this option include the loss of a proven asset and the retrograde re-substitution of less efficient methods of information exchange.

(b) Exchange information through direct terminal/system connections.

The advantages of this option lie in the simplicity of the access. The major disadvantage lies in the fact that costs will grow geometrically with the addition of new agencies or processors. The total annual cost for institution of this option is estimated [REDACTED] per year.

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Alternative 3 - Upgrade COINS to eliminate major weaknesses.

Several concepts offering maximum utilization of existing COINS hardware and software, while at the same time significantly upgrading the COINS system have been proposed. Attachment A discusses a concept developed by ARPA, which eliminates the need for the switch. Appendix III discusses the TETRAHEDRON concept. The difference between the two lies mainly in the fact that ARPA hardware has been designed, while the TETRAHEDRON concept requires some development.

The principal advantages of the concepts are that each agency would maintain autonomy, the switch would be eliminated, and all current hardware and software remain usable. The major disadvantage is that multiple retrieval languages remain necessary. The cost of implementing an ARPA type system is estimated to be approximately [REDACTED] These costs are in addition to the present O&M COINS costs.

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Alternative 4 - Central Community Information Storage and Retrieval System.

In this configuration, a single centralized processor is used to access all community files. Each user accesses the files through an encrypted link. Advantages of the approach include commonality of retrieval and file maintenance languages. Data standards become mandatory, easing interagency liaison problems, and facilitating growth capabilities.

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The principal disadvantage is that the size and the design of the system would render it difficult to change.



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B. Files

One of the principal tasks of the Review Group was the collection, identification, and cataloging of file information, and the analysis of the Washington area files for indications as to their content and the reactions of the community to their interchange. These reactions were expressed through statistics of the community use of files presently available through COINS, and through user agency expressions of interest in on-line access to other agency files.

A description of all files was presented for analysis by each agency. Information contained in these disclosures included: host agency, security classification, geographic coverage, subject category and means of access, as well as descriptive narrative about the file itself. A major result of this effort has been in the compilation of this information, contained in Attachment A.

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V. CONCLUSIONS

A. Requirement for Automated Information Exchange

The general conclusion regarding the exchange of information on-line is that a requirement presently exists and the requirement will significantly increase in the near future. This conclusion is supported by a number of observations.

1. There is an increasing dissatisfaction within the community with manual files generally. There is a correspondingly growing awareness within agencies of the existence of files on-line in other agencies for which access would be desirable and beneficial.

2. There are large bodies of information presently collected which by their very essence can only be disseminated in an efficient manner on-line. Special processing centers are increasingly maintaining such information on-line, and the prognosis is for rapid expansion. Examples are air movements, naval movements, photography readouts, etc.

3. When one agency maintains information on-line, the most, and in some instances the only efficient means of access, is on-line. For example, the entire air movements base was put on-line by NSA under USIB direction.

4. The user agencies in the Washington area are expending resources to participate in the COINS experiment and additional organizations both inside and outside of the Washington area have expressed a requirement to participate.

5. The user agencies represented on this Review Group have expressed high interest in on-line access to a total of 54 existing files of which 12 are presently available through COINS.

6. Available data show that more than one third* of the COINS interrogations represent one organization interrogating the files of another.

* The exact percentage cannot be determined at this time due to statistical inadequacies. The DIAOLS system files may be accessed from terminals in either a batch mode or interactively, at the option of the interrogator. Interrogations through the network switch may only access the files in a batch mode. DIA does not consider interactive access as part of the COINS system and has not provided a means to count such interrogations. Therefore, the percentage quoted above refers only to interrogations in the batch mode.

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B. COINS Effectiveness

COINS has demonstrated that on-line data base exchange among community users is feasible and achievable. This conclusion is supported by the following observations:

1. COINS now provides operational support to community users and has a potential for even greater operational utility, provided present limitations are overcome. Additionally, it has developed experience for the community in dealing with such problems as:

- a. Netting together of diverse computer systems.
- b. Management of diverse networks.
- c. Security
- d. Data standards
- e. Retrieval languages
- f. User education and support

2. An organizational structure providing the mechanism for the handling of present and future problems of interagency exchange has been evolved.

3. There is general satisfaction with the ability of COINS to provide timely responses to interrogations. Median response time of less than 20 minutes, with an average response time of less than one hour is now the rule. This is considered timely for batch mode interrogations.

4. Analysts have been provided a manipulative capability which has helped to enhance their effectiveness, and has resulted in an overall manpower savings.

5. A number of daily electrical end product reports have been replaced by on-line COINS access tailored to consumer requirements; at the same time relieving a burden on communication facilities.

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6. The above benefits have been achieved at a minimal cost through the use of existing hardware and software. Very little of the FY 73 operating cost is unique to COINS [REDACTED]

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C. COINS Weaknesses

The study has revealed notable shortcomings in the present COINS approach to information exchange. Some of these are management-oriented, and others purely technical.

1. The assignment of a single agency as the executive agency for the COINS experiment has not provided sufficient management in authority to deal effectively with relevant problems of conflict between agencies regarding roles and missions with regard to intelligence collection, processing, dissemination and production.

2. Security and compartmentation is a critical issue. Significant information is now excluded because of security restrictions. Without a solution to this problem, COINS or any other general information exchange network will be of limited value. Solutions to this problem have been proposed and the Computer Security Subcommittee has them under advisement.

3. The community is not satisfied with the selection of files available through COINS. In this connection it must be stressed, however, that the decision to place any file on COINS rests wholly with the sponsoring agency. Efforts being made to change COINS files at present must deal on a relatively low priority basis with other agency problems. In the last analysis, COINS is only as good as the files which may be accessed through it.

4. File maintenance and updating needs improvement. Agencies have maintained only those files which are of internal operational value, and have also resisted external pressures to alter data formats and query systems, or to include more detailed data than they themselves need.

5. Education, documentation, and training of users and potential users are problems of continuing concern because of the changes in the user population, the addition or modification of files, and changes in service.

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6. The present COINS configuration limits its capability for expansion to satisfy future interagency access requirements.

a. The system is not interactive, which limits its usefulness for certain types of data.

b. Reliance on the switch is inconvenient. Closure at night, or over week-ends and holidays can prevent access to certain needed files. Switch failure can also be critical.

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VI. RECOMMENDATIONS

Based on the results of this study, the Review Group recommends the following:

1. The DCI direct that an aggressive program of automated information exchange be undertaken.

2. To implement the above, the Review Group proposes that [REDACTED] of the DCI with the COINS Project Management Office (PMO) made responsible to the executive agency.

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3. COINS funding be continued, subject to stipulations included below.

4. The USIB Security Committee and its Computer Security Subcommittee address the multi-level security problem with an eye toward immediate interim solution. This Review Group suggests [REDACTED]

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TAB *A*

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~~ATTACHMENT A~~ STUDY RESULTS

This attachment provides a summary of the information gathered during the course of the study. No attempt is made here to interpret these results or to draw conclusions from them.

The results presented cover two general topics:

A. System Descriptions - current system and alternatives, including advantages, disadvantages, limitations, and costs.

B. Files - summary of the data on Washington area files, including COINS and non-COINS files, with comments regarding use and interest.

A. System Descriptions

1. Current System



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It should be noted that there is some disagreement, even at this date, as to a proper definition of the COINS system. The disagreement stems mainly from the fact that COINS was implemented using existing hardware, software, and communications facilities. In fact, most of the hardware, software, and the files were already available for users prior to the existence of COINS (i. e., some degree of dissemination of file data, on a direct terminal access basis, was occurring, and this dissemination mode was absorbed into COINS).

The advantages of the configuration of Fig A-1 are:

a. The system is operational and provides modest operational support.

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- b. Sizable fixed cost investment, particularly in software, and procedures continue to be capitalized.
- c. Analysts have been given initial training of the system.
- d. Systems analysts and technical personnel are thoroughly familiar with the system and operational performance is still improving.

The disadvantages of the configuration are:

- a. Technology used in implementing the present COINS is, in some cases, obsolete.
- b. Two query languages must be learned to use all files.
- c. Only formatted files may be handled.
- d. Operates at a single security level (TS/SI) and as a result, not all information is available to users.

The configuration limits the potential of interagency exchange, since:

- a. Massive files, such as AEGIS, an on-line, all source textual file at CIA, cannot be accommodated should such on-line access be required.
- b. Interactive and time-sharing operations are not possible.

Present procedures for recording or reporting management information do not readily lend themselves toward the pro-rata assignment of costs. In order to derive these costs, it proved necessary to review the program elements relating to COINS, and estimate the percentage of these costs which are attributable to COINS operations.

A summary of the pro-rata and unique cost (FY 73) for all agencies for COINS is contained in the following table. Complete cost breakdowns are contained in Appendix II.

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2. Alternative Configurations - Four broad categories are considered.

a. Maintain the present configuration and upgrade the system security level.

b. Eliminate COINS and satisfy existing and future interagency exchange requirements through bilateral, direct terminal access arrangements.

c. Upgrade COINS to eliminate major weaknesses.

d. Replace COINS with central information storage and retrieval system.

The alternatives and the cost implications are summarized in what follows.

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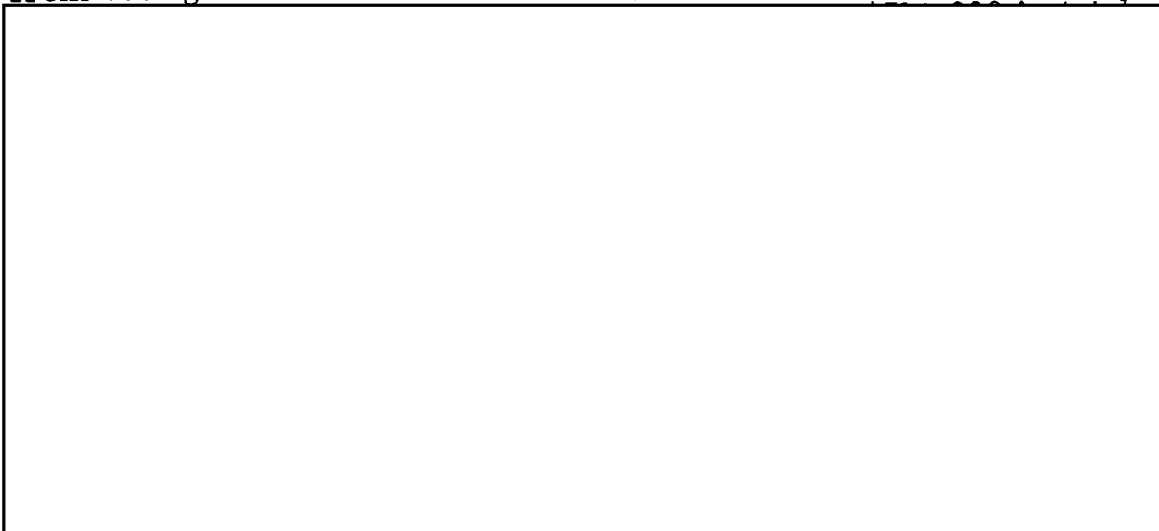
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Under this alternative, it is possible to envisage at least two basic sub-alternatives. The first would encompass not only the abolishment of COINS but the cessation of all on-line exchange of information hitherto exchanges through COINS and a return to off-line methods (e.g., hard-copy exchange, electrical dissemination of summary types reports or indirect access to data bases via "opscom" links). This first sub-alternative presupposes a prior community judgment that there does not exist any credible community requirement for on-line interagency file access. The second sub-alternative would involve the substitution, for the present COINS, of a series of bilateral interagency terminal links characterized, for purposes of convenience, as a terminal swap. This second alternative clearly presupposes a need for some continued on-line interagency file access of a type and magnitude at least as great as that which COINS now accommodates.

Option A - Abolish COINS/Revert to Off-Line Only Exchange
Advantages

Virtually the only advantage, or more accurately stated, the only justification, for resorting to this alternative would be an overriding need to realize whatever resource savings might be achieved from outright abolishment of COINS. The maximum, theoretical



Any calculation of the magnitude of outright savings to be realized by the ~~abolishment of COINS~~ and the cessation of on-line exchange must be further reduced by amount of resources that the agencies involved - especially NSA - must rededicate to the production of hard copy reports, to the reinstitution of electrical summary type reports (as, for example, in air movements) and of the cost to NSA and other agencies, of replacing the remote COINS terminals with OPSCOM type links for indirect data base access. Although within the time available for the preparation of this report, it has not been possible to identify a figure for these costs, it is certain that after including the additional costs the direct cost savings that might be realized from abolishing COINS-small in any case -- would be smaller still.

Disadvantages

By contrast with very small cost savings that might be gained from abolishing COINS and ceasing further on-line exchange of information within the Community, the disadvantages associated with such a course are considerable.

1. The loss of a substantial body of experience in the on-line exchange of data and the loss of an asset of proven worth for accomplishing such exchange.
2. A retrograde resubstitution of inherently less efficient methods of information exchange, especially with respect to those bodies of intelligence which, in terms of their volume and character (discrete elements of formattable data), most readily lend themselves to exchange in digital automated form and which, in terms of time sensitivity, are most effectively provided through on-line systems. Air movements are, in this respect, only the most conspicuous examples to date of this genre of information.
3. The loss, for the indefinite future, of the only instrumentality available to whole community for further experimentation with file access on a community as distinct from a purely agency-to-agency basis.

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Option B - Eliminate COINS. Exchange information through direct terminal/system connections.

Definition: Diagrams for this alternative are shown in Figure A-2. Communication links, terminals, and crypto equipment are shown in the diagram. The numbers of terminals, lines and other equipment are estimated from information supplied by each of the agencies.

Operating Procedures and Assumptions:

- (1) A system which services only present COINS files is required.
- (2) Each agency would make bilateral agreements with another agency to share data. Generally, the agency would provide a compatible terminal, a communications line and the suitable crypto gear, (2 units) necessary to interface with the host system as if it were an internal station. There would be little interaction with the community as a whole. The agency interfacing with the host computer would be required to follow the same operating procedures as any other station connected to that system.
- (3) It is assumed that to provide a level of service comparable to that of the present COINS system, forty terminals would be directly connected to systems not collocated with these terminals. Terminal costs are assumed to be \$2,000/year, average line costs are assumed to be \$1,500/year, and the cost for crypto equipment is assumed to be \$3,600/year/terminal. In addition, it is assumed that the services of one individual, full time, would be required to service one equipment in the network. The cost of one analyst (full time) has been added to the cost figures to show the manpower which will be expended in smoothing out operational difficulties.
- (4) The capabilities provided at the terminals will be constrained by the capabilities of the host system and any other agreements reached by the two agencies.
- (5) Funding for this approach would be provided out of each of the agencies' operating budgets.
- (6) Security procedures would be worked out between the two participating agencies.
- (7) Couriers would deliver long listings in order to conserve system resources.

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Advantages

- (1) A relatively simple communications system.
- (2) Eases interagency liaison problems.
- (3) Reduces community investment in developing file processors.
- (4) Provides direct access to the desired system.
- (5) Provides a better means of coping with the multi-level security problem.
- (6) Provides a basis for resource sharing if interagency arrangements are satisfactory.

Disadvantages:

- (1) Provides no impetus towards commonality (data standards, languages, etc.)
- (2) Although initial costs are low, they grow geometrically with the addition of new agencies processors.
- (3) Investment in working software is lost.
- (4) Mix of files may dictate major changes in cost.
- (5) Unable to take advantage of remote terminals already in place.
- (6) Does not anticipate legitimate needs for computer-to-computer communications.
- (7) Does not provide a positive atmosphere for interagency sharing of information.

Limitations/Growth Potential:

This approach to providing access to agencies' files is severely limited in its growth potential. The addition of new systems or agencies into the community of users would cause system costs to expand rapidly.

For instance, if the agencies attempted to access three additional systems, the added costs would approximate \$142,000/year assuming that each agency were to provide a terminal at each major location for each system. (See Table A-1)



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TABLE A-1

1. Cost to add a new terminal to the system -- \$7,100/year.
2. Major terminal sites in the local area -- 9
(DIA has 3 sites, CIA has 2 sites, NSA has 2 sites, State has 1 site, NIC has 1 site).
3. The addition of a system would require the addition of terminals at each site unless the system already serviced that site.
4. If systems were added to NSA, CIA and DIA which contained information of interest to the community as a whole, 20 additional terminals would be required if only one terminal was added to each site (3 additional terminals for State and NIC, 4 additional terminals for CIA and NSA and 6 additional terminals for DIA).

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Alternative 3 - Upgrade COINS to eliminate major weaknesses.

There are several concepts which may be proposed that offer maximum utilization of existing COINS hardware and software, while at the same time significantly upgrading the COINS system. The concepts may be differentiated on the basis of whether they present near-or far-term configurations, and the extent to which they require additional hardware and software development. The one presented in this section utilizes a concept developed by ARPA. Another proposal is found in Appendix III.

Description: The configuration is as shown in Figure A-3. The present COINS hosts are as before, except that NPIC can now participate fully, since it is assumed that the entire network has been upgraded to at least the TK level. Each COINS participant maintains his hardware and software, as in the current configuration. Crypto units are placed at each end of all transmission lines between secured Interface Message Processors (IMP's).

Advantages:

- (1) Each participating agency maintains absolute and full autonomy.
- (2) The COINS Switch is eliminated.
- (3) All current hardware and software (with exception of Switch support) is useable.
- (4) Provides traffic flow security by operating crypto-equipment continuously between the secure IMPS.
- (5) Does not require highly sophisticated or complicated crypto-equipment (no multi-variable storage and control).
- (6) Little impact on current network operation.
- (7) Provides relative easy key variable changes on a circuit-by-circuit basis with essentially no system "downtime."
- (8) Where deemed necessary each end of the line (Host/IMP cable) between the Host computer and secure IMP could have crypto-units. Thus, the message content would be secured on a Host-to-Host basis while the header of the message would be secured on an IMP-TO-IMP basis.

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(9) IMP-TO-IMP encryption could be implemented in the near future, using the KG-13 (up to 100 KB/S) or KG-30 family (up to 1.6 MG/S) with little modification.

(10) Sets the stage and provides a base for the integration of additional "interactive" or "batch" retrieval system into COINS such as:

(a) STATE/CABLES

(b) CIA/AEGIS



(11) In normal operation or if a path is lost the message is relayed at most only once.

Disadvantages

(1) Network security is primarily dependent on proper operation of IMP routines. Mistakes in IMP operation could misroute classified information (may not be a problem as entire COINS network has same level of security).

(2) IMP-TO-IMP encryption does not provide spillage protection or authentication to the Host computer installations. The connections between secure Hosts and secure IMPS must also be protected (not so if crypto-units are placed on each end of the line, as in item 8 of advantages).

(3) Multiple retrieval languages must still be used/learned and there is still the lack of Data Standards.

Limitations

(1) Doesn't solve the multi-retrieval language problem which becomes more and more of a user deterrent with the addition of new system.

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be
by

Growth Potential:

1. Provides for expansion to include other inter-active or batch system which in turn will provide for more;

(a) remote terminals which in turn provides for more users.

(b) shared data bases to be available to the community.

Costs:

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Alternative 4 - Central Community Information Storage and Retrieval System

Definition: A diagram of the network is shown in Figure A-4. The informatics, Inc., study of 1970 set forth an estimate of 50 terminals (initially) growing to 200 over a period of 5 years. Estimates are based on 200 terminals located in five agencies.

Operating Procedures and Assumptions:

- (1) One agency (independent or participant) would be designated to install, manage, maintain, and operate the Central Community Information Storage and Retrieval (CCIS&R) System.
- (2) The CCIS&R System will provide the following capabilities:
 - (a) Remote batch (query and maintenance).
 - (b) On-line, interactive query capability.
 - (c) On-line, maintenance.

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- (e) Fail-soft operation.
- (f) Reminder to file host of violation of file maintenance schedule.
- (g) Administrative reports to all using agencies of number of queries, aborts, files queries, etc.
- (h) Twenty-four hour per day, seven days per week operation
- (3) The CCIS&R System will not provide the following capabilities:
 - (a) Program development or debug.
 - (b) Data exchange, i. e., transfer of entire file to a computer at a user's site.
- (4) Funds and manpower necessary to support this activity would not be subject to the budgetary reviews conducted in the host agency, i. e., support would come from community funds and this facility would be monitored by USIB/IRAC.
- (5) System design allows for reasonable service to customers under steady-state, non-crisis situations. Under crisis situations priorities will keep regular users off the system or delay their queries.
- (6) Terminals, not people, will be cleared for access and identifiable by the software system. Individual agencies would have the responsibility -- as they have today -- for assuring that properly cleared personnel with the need to know have access to a terminal. In all cases the terms of DCIS 1/16 apply.
- (7) Couriers would hand deliver long listings since extended printouts on-line are unacceptable in an interactive system.

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(8) Training courses will be set up to inform and indoctrinate users.

Advantages:

(1) A common retrieval language; a common file maintenance language.

(2) Data standards are mandatory.

(3) Common communication and communications security equipment.

(4) A new user could join the system at little cost.

(5) A relatively simple communications system.

(6) Eases interagency liaison problems.

(7) Reduces community investment in developing several file processors.

Disadvantages:

(1) Does not anticipate or allow for legitimate needs for computer-to-computer communications.

(2) May be at odds with DIA-IDHS plans.

(3) One agency imposes many technical decisions on others.

(4) Service under crisis conditions may not be acceptable.

(5) Size and design of system would probably render it very difficult--technically and politically--to change.

(6) Services of common concern have (historically) received their budgets through line office planning rather than through the relatively unwieldy actions of USIB/IRAC committees.

(7) Enforcement of file maintenance may be impossible, i. e., value of files may deteriorate.

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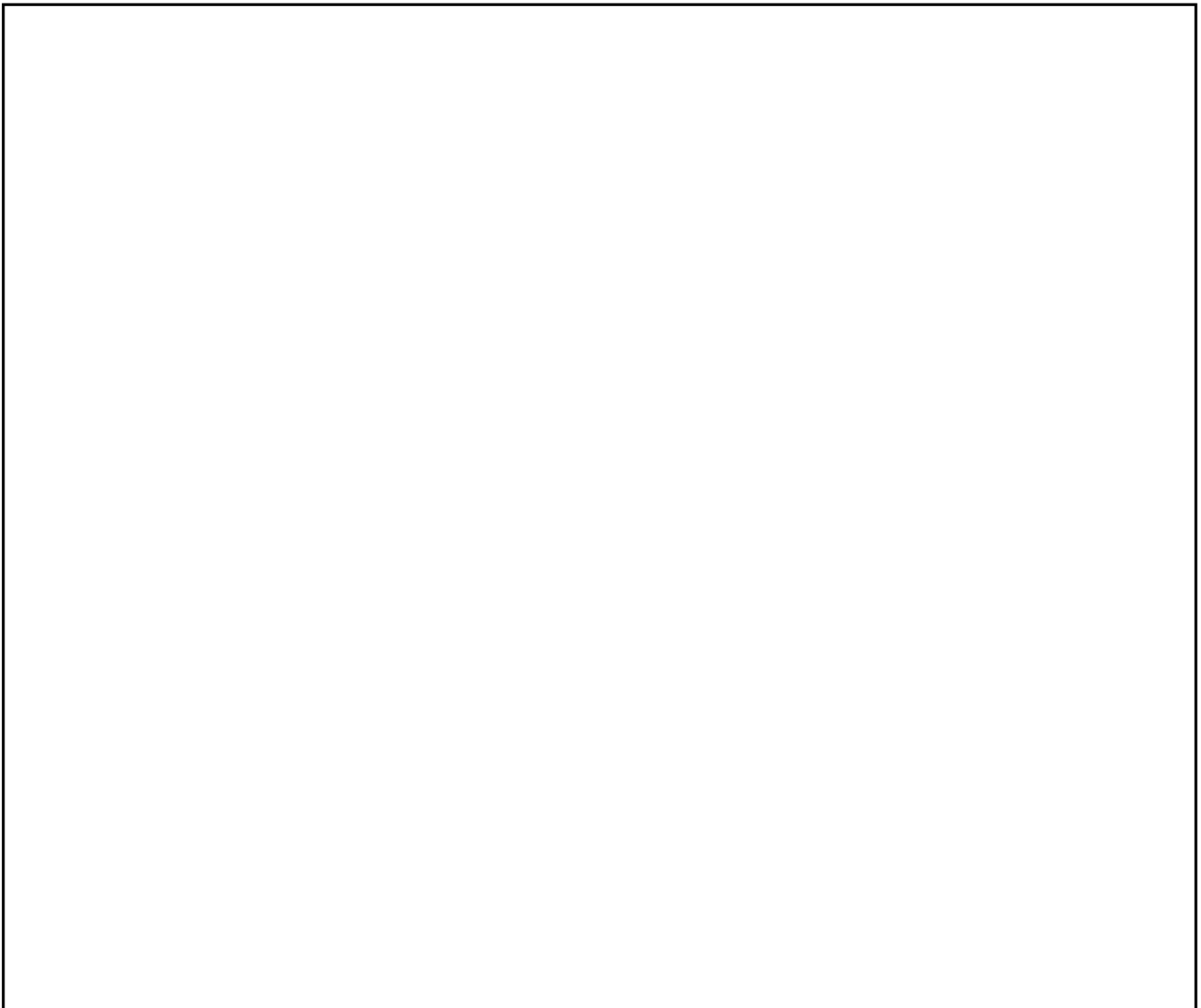
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(8) Establishment of an agency's file at the central facility would probably not eliminate the need to also keep the file locally. Therefore, in the worst case, every file on the central computer would have its counterpart on some other computer system--with all that implies.

(9) Specifications for the software system might be extremely difficult to establish since the system would have to satisfy all user requirements. Alternatively, it would be necessary to compromise, and the result would be disaffection and dissatisfaction on the part of many users.

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B. Files

For the purpose of providing a consistent set of ground rules for the analysis of file data, the following definitions were established:

(1) Files - All pertinent Washington area automated files, whether or not presently part of COINS and whether or not presently accessible on line. The files considered are contained in Tables C-1 and C-2, and NC-1 through NC-6. A list of those files not considered is also provided (Tables F-1, 2 and 3).

(2) Community Use - Defined as present on line usage by one or more agencies, other than the file host. For non-COINS files, off-line dissemination is therefore classified as no community use. For those non-COINS files where some present on-line usage has been noted, the stated degree of this use (low, moderate, or high) represents an educated guess on the part of the file host. The degree of use of the present COINS files comes from data provided by the COINS program manager.

(3) Community Interest - The present levels of available information is insufficient to permit accurate definition of interagency requirements for on-line exchange on a file-by-file basis. Accordingly, for this review each user agency expressed an opinion as to the degree of agency interest in on-line access to each file. This expression of interest is intended to serve as a point-of-departure for an eventual definitive statement of need. Files for which more than one agency (other than the sponsor) have expressed high interest, are listed in Tables I-1 and I-2.

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(5) Redundancy - The positive identification of redundant or overlapping files will require a detailed analysis of all file data elements. This attachment identifies and flags those files which give outward appearances of containing information possibly redundant with that of other files. These files are shown in Tables R-1 and R-2.

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(6) Priority - To attempt some correlation between use, interest and importance of community access to a particular file, the range of priorities for information contained in each file from the applicable geographic area was taken from the intelligence objectives and priorities as stated in DCID 1/2 and JSOP FY 75-82, Annex A. An asterisk is used to indicate a special category, where the file coverage crosses many intelligence objectives and many geographical areas, and a single priority cannot be determined.

The notation for community use and interest is:

N: None
L: Low
M: Moderate
H: High
?: Unknown or unable to determine

The expressions of interest represent estimates, as discussed previously. For files which are presently accessed through COINS, statistical data are available regarding file use. These numerical data have been converted to the above format by dividing the October 1972 use counts into quartiles.

The notation for priority ratings is:

1-8: High through Low DCID/JSOP ratings.
--: None stated (no priority)
*: Special (see paragraph 6)
?: Unknown or unable to determine

Use, Interest and Priority selections for the table have been chosen as the highest of the range presented by the different agencies.

With regard to the file redundancy indications of Tables R-1 and R-2, two of the areas in the table were selected for further examination in greater detail - Ground Forces files and Installations files. The evaluation was performed by the file sponsors on the basis of a review of the following data on each file:

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File name and category
Number of records and elements per record
Geographic coverage
Classification
Period of coverage
Update schedule
Requirement for file
Record creation criteria
Use/Purpose
Remarks

In reviewing the Ground Forces files, the following points were noted:

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2. OSD(SA) file and the CIA Forces file were both created in support of the MBFR. Data elements should be examined in detail, as these files appear quite redundant.

3. CIA Forces file and the DIA DGOBA, each in the developmental stage, are both all source GOB files. There appears to be redundancy in the Warsaw Pact area. Data elements should be examined.

4. There is some existing duplicative effort in DIA in support of both the DGOBA and the OSD(SA) file. Work is now underway in DIA to eliminate this by supporting DGOBA alone with input and extracting from this file to support the OSD requirement.

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The DIA DGOBA all-source file is subdivided into three sub-systems, at three security levels: collateral, SI and TK. In the Middle East/North Africa area of geographic coverage, there is a possibility that JACOB could supply the SI input to the DGOBA.

6. It appears that the stands alone as an activity file, without redundant information.

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Because of the redundancies noted above, a detailed analysis of the data elements for DGOBA, FORCES, JACOB, Soviet Ground Forces OB and the OSD(SA) files should be performed.

Review of the installations files led to the following notes:

1. Unwarranted duplication among location/installation files within the community was found to be slight. While geographic areas of interest overlap (4 out of 5 files are worldwide), the files are significantly different based on purpose and use, structure, and classification level. The periods of coverage can be segregated by those files (or portions) that date back to the 1940's, and those whose date level begins in 1968 or 1969. A file update trend shows the movement toward daily or as required after an event or mission.

2. The DIA AIF (Automated Installation Intelligence File) is the largest installations file and is the "national repository" supporting target analysis, SIOP planning, US field commanders, and NATO forces. It is a SECRET NOFORN file. Its nearest "look-alike" is the DOD DBIDI, which is in development. The DBIDI will be a much smaller file, will provide DIA analysts with TK results not available in a useable time frame from NPIC's IDF (Installation Data File), and is being designed to provide management data from which low priority TK analysis (target readouts) can be eliminated.

3. The IDF is a tool for NPIC analysts and has been designated the national photographic intelligence data base. The National Tasking Plan tasks NPIC with its maintenance.

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It is felt that the location/installation file differences outweigh the similarities; therefore, a data element by element comparison is not recommended.

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Appendix III

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APPENDIX III

COINS II PROPOSAL

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APPENDIX III

COINS II

I. PROBLEM

A. The Intelligence Community is now confronted with an information overload crisis. This problem can only become worse in the future with the ever increasing volumes of information, especially with the introduction of new SIGINT and PHOTO collection systems. At the same time, there are decreasing resources to handle this information. Continuous overload of the Community's information systems seriously hampers its capability to:

1. respond to crisis or time sensitive situations.
2. correlate and analyze information from a number of different sources in a timely fashion.

B. This situation is made even more acute today by the fact that each agency must strive for self sufficiency by building and maintaining its own intelligence information files and computer based information systems. Little, or no consideration is given to the information requirements and systems of other agencies, or a need to interface information systems with those of other agencies. Further delay in operational implementation of an interagency system may render creation of a future facility of this nature extremely difficult, if not impossible, because of increasing costs and unilateral agency system commitments.

II. FACTS BEARING ON THE PROBLEM

A. The COINS Experiment has proven the feasibility and utility of information exchange by means of an interagency computer network.

B. It is not operationally practical to centrally store all data bases of common community concern in one agency or one computer complex.

C. Some of the information files of common community concern should be maintained in machineable form and made available to other intelligence agencies in an on-line fashion. The question to be answered is, "What information files need to be accessed on-line?"

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D. The information files of some agencies are not available to other agencies on an around-the-clock basis (i. e., during weekends, nights and holidays). This is of particular importance during periods of immediate operational need. Procedures do exist for an agency to request another agency to provide certain information, however responding to some requests is often slow and time consuming.

E. The EDP and telecommunications technology is available today to permit significant improvements in the mass storage and in the secure on-line retrieval and distribution of intelligence information.

III. DISCUSSION

A. The EDP technology used in the present COINS network is primitive (if not obsolete) compared with the technology available today. Perpetuating the present network with no firm plans to upgrade or replace the present network in the near future is neither a realistic nor a practical position for the community to take.

B. The present experimental COINS network has proven the fact that there are certain types of information files to which the analysts require on-line access, or, at least, they appear to prefer on-line access.

C. It is impractical to store in a single, central computer complex all of the machineable information files which need to be shared in the community. Serious consideration should be given to integrating the following existing large-scale information systems into a follow-on COINS type network.

AGENCY
NSA



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*DIA

DIAOLS

NAVY

OSIS

STATE

STATE CABLES



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* Now netted together in COINS, however, TK data bases in NPIC are not now available in COINS. Other systems presently on COINS that could eventually open up files are sponsored by PACOM and CONAD.

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AGENCY

SAC

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CIA

AEGIS

IBM 370/155 R

*NPIC

IIS

UNIVAC 494

D. The U.S. intelligence community must gradually replace the present COINS network over the next five years with one which:

1. Eliminates reliance on the single non-redundant store and forward switch at DIA which is batch oriented (i.e., transactions handled individually and independently).

2. Provide users with a common information retrieval language capable of handling:

a. interactive and batch interrogations

b. formatted and non-formatted (freeflow) files.

3. Nets computer systems together which are primarily intended to promote the interagency sharing of files and programs.

4. Provides a capability to simultaneously handle information from multiple security compartments and to control need-to-know.

IV. PROPOSAL

A. Assumptions: The proposed concept of operations is based on several fundamental assumptions:

1. There is a valid, implicit community requirement:

a. to build, maintain and share machineable information files of common concern on a variety of selected subjects.

b. for a secure network of digital computers to permit on-line access to these files around-the-clock.

2. The technology to implement such a network is available.

3. The economic and operational benefits to be derived from sharing data bases and an information system would more than offset the costs required to implement this proposal.

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4. Each participating agency would determine its own level of participation.

B. COINS Follow-On:

1. Design a follow-on COINS network making maximum use of existing and available technology. The network would be dedicated to the on-line sharing of formatted and non-formatted machineable data bases within the U.S. Intelligence Community. This network would be designed to permit an authorized user operating from a remote terminal located anywhere in the world to work in a secure fashion with:

a. Any computer in his own installation to which he is authorized access, including the file processor in which COINS information files are resident, or

b. Any file processor in the network to which he is authorized access and which handles COINS information files.

2. The follow-on COINS network would be composed of:

a. A secure digital communications network (i.e., TETRA-HEDRON) which would be used to link together a number of "secure digital exchanges" (the latter would be analogous to the present secure telephone exchange for the transmission of analog signals).

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c. Common, dedicated file processors and data base management systems at each node in the network to handle the processing of information files of common concern.

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4. Considerable effort has already been put forth by the COINS Project Management Office on the development of a technical plan for the follow-on COINS and this effort is continuing.

C. Advantages: There are some substantial economic and operational advantages to be gained from adopting this proposal.

1. Economic Advantages Expected: Valuable resources (i.e., personnel, material and computer time) would be saved through the elimination or reduction of unnecessary duplication. This concept would:

a. Prevent new, additional machineable information files from being independently established in the future.

b. Reduce the number of similar or duplicate machineable information files which are currently being maintained.

c. Reduce the number of machineable information files being exchanged off-line for further processing in other computer systems (note: If current, complete and accurate information is available on-line around the clock, some of these off-line exchanges would not be necessary.)

d. Free some of the computer capacity now being used to process similar or duplicate files. It may even negate the need for a computer system at certain sites.

e. Reduce the man hours needed for integrating and maintaining the network through the use of common computer systems and remote terminals.

2. Operational Advantages Expected: Timely, complete and accurate information would be available to all agencies whenever required for responding to customer requirements. This would be even more important than the savings in resources, because the products of the intelligence community directly affect the military, political and diplomatic posture of this nation. Specifically, these concepts would:

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a. provide an authoritative single source of information on some selected key subjects, with a reduction in the number of multiple, possibly contradictory, sources to be consulted:

b. increase selectivity and flexibility of information retrieval beyond the feasibility of manual methods (e.g., manual searching of a file for specific word endings is impractical);

c. improve the timeliness of responses delivered to users;

d. result in files being designed to satisfy the information requirements of all agencies, and the availability of these files even to agencies with only an occasional, but critical, requirement;

e. minimize duplicative analysis, continuing separate analytic efforts only when necessary to eliminate conflicts in interpretation of intelligence information; and

f. identify missing items of information from a data base, which might result in an intensified collection effort.

V. RECOMMENDED ACTIONS: The DCI should:

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B. Establish a committee under USIB to identify the information files and services to be handled within the follow-on COINS network.

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